R-2306

FEASIBILITY STUDY

US 74, From I-40 to SR 3136
Buncombe County
R-2306

Prepared by
Planning and Research Branch
Division of Highways
N. C. Department of Transportation

6/24/88
Date

E. Y. Allen, Jr.
Project Engineer

6/24/88
Date

J. M. Greenhill
Manager, Planning and Research

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I. DESCRIPTION

This report covers a preliminary study of the 6.7-mile subject highway extending from the I-40 interchange ramp terminal at Asheville southeastward to the intersection with SR 3136 at Fairview. Project location is shown on the attached maps. This project is listed in the 1988-1996 Transportation Improvement Program for feasibility study and/or right of way protection. It is not currently funded.

II. PURPOSE OF PROJECT

Existing Route

US 74 is designated as a minor arterial in the Buncombe County Functional Classification Plan. It provides important radial access to Asheville and I-40 from growing outlying areas in southeast Buncombe County.

The studied section of road generally has a 22-foot pavement with variable shoulder widths of up to 5 feet. A recent safety project added approximately 0.6 mile of a continuous third lane for left turns in the vicinity of SR 3121. A three-lane section is also provided at the signalized entrance to a sizable high school just east of SR 3121 and at the interchange with the Blue Ridge Parkway.

Claimed existing right of width is 60 feet. However, few, if any, recorded agreements are available. For cost estimate purposes, the existing right of way is assumed to be 35-40 feet, which is the width maintained by the State.

Horizontal alignment of the road is relatively good, with no curve exceeding 4 degrees. Vertical alignment is generally undulating, with grades ranging up to 8 percent. Because of the vertical alignment, safe design speeds are limited to about 40 MPH. With the combination of rolling grades and numerous crossroads, safe passing distance is restricted to approximately 15 percent of the total project length.

No bridges exist along the entire studied section. Two and three barrel box culverts are located at several points where a small but scenic parallel stream switch from one to the other side of US 74. At its interchange with the Blue Ridge Parkway, US 74 passes underneath a considerably high bridge carrying the Parkway. Horizontal clearance between the piers of the bridge measures approximately 60 feet.

The existing road traverses a combination of rolling and mountainous terrain. Approximately one third of the studied length is bordered by extreme topography resulting in steep roadway cut and fill slopes.

Adjacent land use is a mixture of woodland, pasture, and development. Light to moderate density development is found along US 74, consisting primarily of residences with some businesses. Other development includes a high school, elementary school, fire station, trailer park, campground, churches, and small industries. Instances of recent subdivision and condominimum development are noted throughout the studied section. A sizable shopping center has been planned for years in the area of SR 2776 near Fairview.

Traffic Volumes, Capacity, and Accident Record

Current traffic volumes on US 74 range from 6500 vehicles per day near SR 3136 to 11,000 vpd near I-40. Assuming greater than normal growth due to the area's high potential for future residential and commercial development, estimated traffic volumes for year 2008 are 15,000 and 31,000 vpd, respectively. Truck composition is approximately 1 percent TTST and 3 percent dual tired trucks.

Speed limit along US 74 is 45 MPH for approximately 2.0 miles from I-40 to just beyond the entrance to A. C. Reynolds High School near SR 2771 and for 1.2 miles from SR 3133 to the project terminal at Fairview. On the remaining studied length, speed limit is 55 MPH.

Capacity of the existing road is 5000 vpd at desirable level of service C (operating speeds of 40 MPH or greater). Since this capacity is exceeded by the present traffic volumes, level C cannot be maintained anywhere along this section of US 74. In fact, the western half of the US 74 section is operating at minimum intolerable level E (30 MPH or less).

Accident data for the past four years revealed a total of 318 accidents for this section of US 74. This yields an accident rate of 3.45 accidents per million vehicles miles (acc/mvm), significantly more than the statewide rate rate of 1.92 acc/mvm in 1986 for two-lane US routes. Major patterns of the accidents were rear end collisions (38%) and ran off road types (32%). Two fatalities were reported, and nearly one of every two accidents involved injuries.

Need for Project

The existing two-lane studied section of US 74 is carrying more traffic than its capacity to accommodate at the desirable level of service. Some of the studied length is already operating under intolerable flow conditions. The capacity deficiency, coupled with a poor accident record, can only be corrected by immediate provision of additional lanes.

III. RECOMMENDATIONS AND COSTS

A field investigation, coupled with a review of available topo mapping and traffic desires combine to indicate that the existing corridor of US 74 is the logical location for adding lanes required to accommodate current and future traffic. Relocating US 74 to provide a higher type facility is an ideal goal for a route of arterial significance. However, it is not a practical alternative when faced

with extreme cost and environmental problems of construction through rugged mountains and disruption to existing and potential development. Also, a new corridor for US 74 is not recommended in the thoroughfare plan for the Asheville planning area.

In view of the proximity of roadside development, a parallel stream, and steep mountainside at various locations, a 5-lane, 64-foot curb and gutter section is the logical and prudent width for much of the project length. Reduction to a four-lane width would be necessary through the underpass of Blue Ridge Parkway where lateral clearance is limited. Also, four lanes may be appropriate at locations where severe slope construction would be encountered.

No major revisions are considered necessary to the alignment of US 74. Although the vertical alignment is not conducive to speeds greater than 45 MPH, it should be adequate for the existing 45 MPH speed limit section and also for the 55 MPH speed limit section where increasing development would likely reduce that speed limit in the foreseeable future.

Capacity of a five-lane section operating under generally uninterrupted flow conditions (with isolated signals) is 32,000 vpd at desirable level of service C. Based on this capacity, adequate traffic operation can be achieved on a five-lane facility for the entire planning period.

A future profusion of traffic signals along US 74 would significantly reduce capacity. Signalized or interrupted flow conditions would render four though lanes inadequate for the estimated 2008 traffic volumes. However, provision of six or more through lanes to satisfy signalized capacity requirements is not an appropriate or prudent consideration at this time. Because of uncertain future traffic projections and construction restraints, only a basic five-lane width should be provided initially.

Improvement of US 74 should extend from the end of a multi-lane section at the I-40 interchange to the intersection of SR 3136, a distance of 6.7 miles. The improvement would logically terminate at SR 3136, designated a minor collector in the Functional Classification Plan. Widening would generally be symmetrical throughout the project length. Some locations would require asymmetrical widening to minimize environmental and right of way effects. Estimated cost of widening the existing road to a general five-lane curbed facility is as follows:

Construction	$ 8,700,000
Right of Way	$ 5,700,000
Total	$ 14,400,000

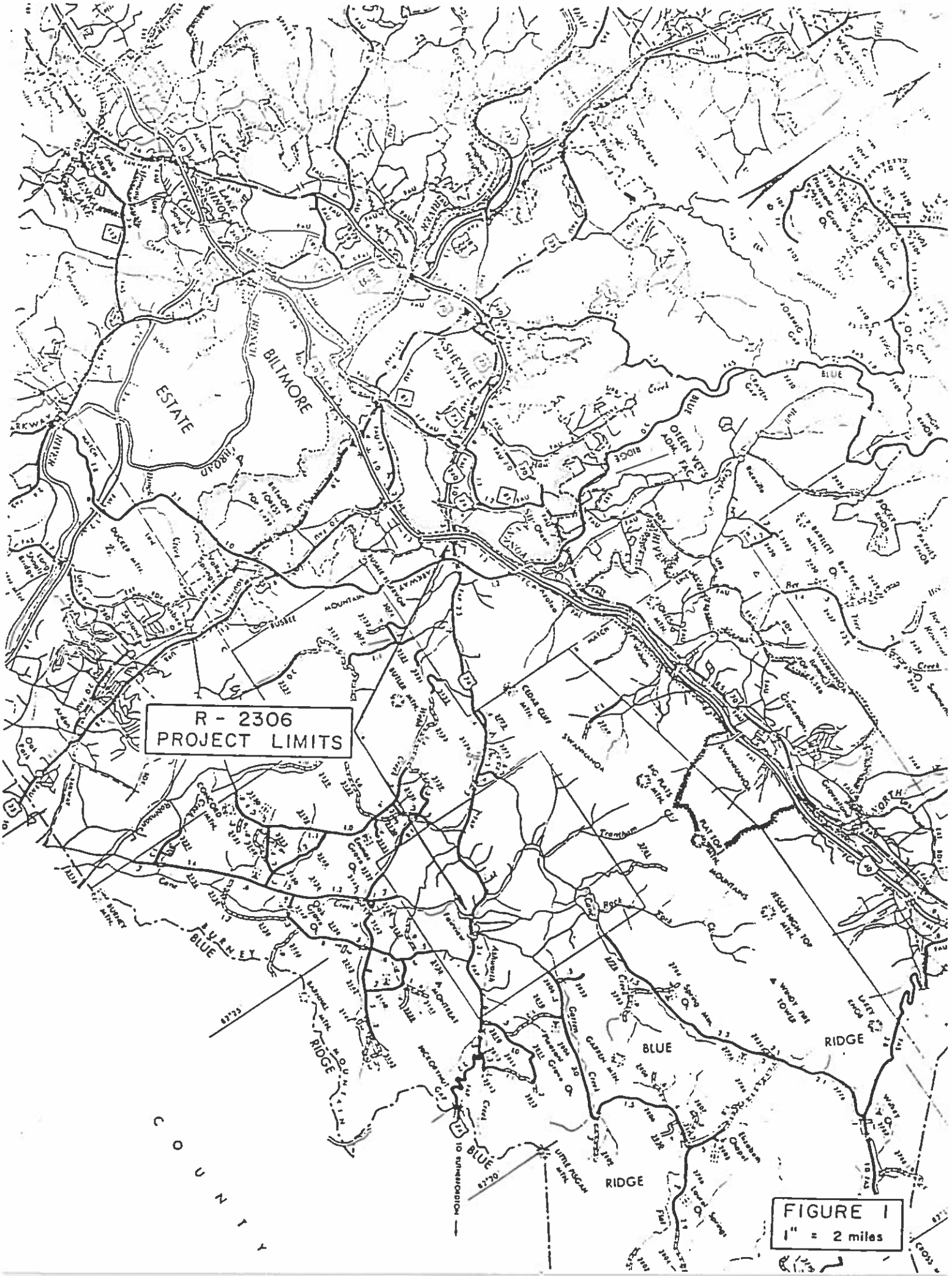
The right of way cost estimate is based on acquiring additional right of way to provide a total right of way width of 90 feet plus easements where necessary to contain the construction limits that extend outside the 90-foot right of way. Cost estimates were prepared by the Design Services Unit and Right of Way Branch.

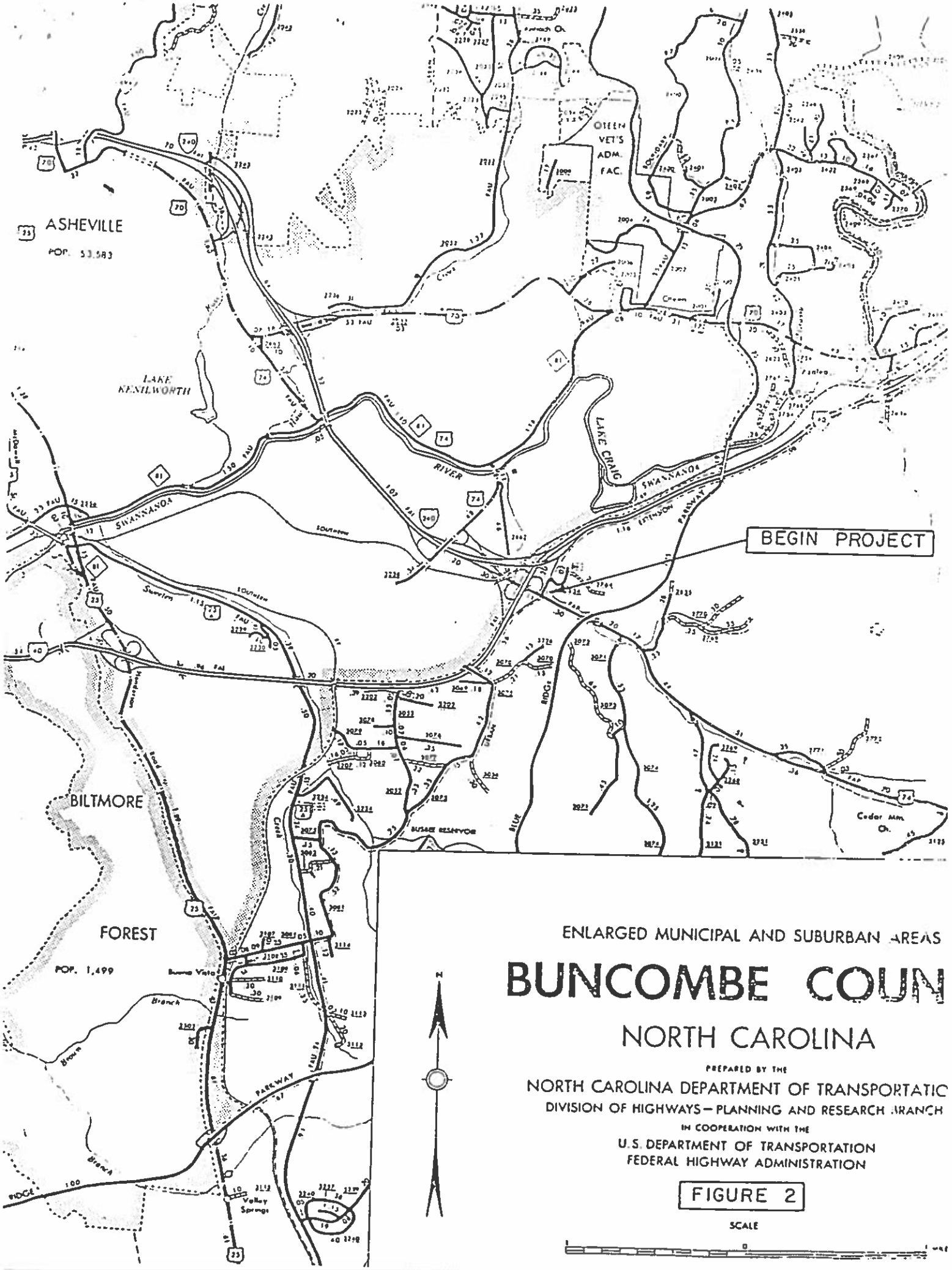
IV. OTHER COMMENTS

No unusual environmental problems are apparent with construction of the recommended plan. Negative impacts would be limited to (1) taking of additional land and approximately 35 residences and 8 businesses for the required additional right of way; (2) loss of some wildlife habitat; and (3) possible siltation into scenic streams and ponds.

Local government should be encouraged to use their available powers to require development to be adequately setback from US 74 to allow the future widening of the road.

RGD/sdt


R - 2306
PROJECT LIMITS
BILTMORE
ESTATE
ASHEVILLE
BLUE
RIDGE
COUNTY
FIGURE 1
1" = 2 miles



ENLARGED MUNICIPAL AND SUBURBAN AREAS

BUNCOMBE COUN

NORTH CAROLINA

PREPARED BY THE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATIC

DIVISION OF HIGHWAYS — PLANNING AND RESEARCH BRANCH

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

FIGURE 2

SCALE

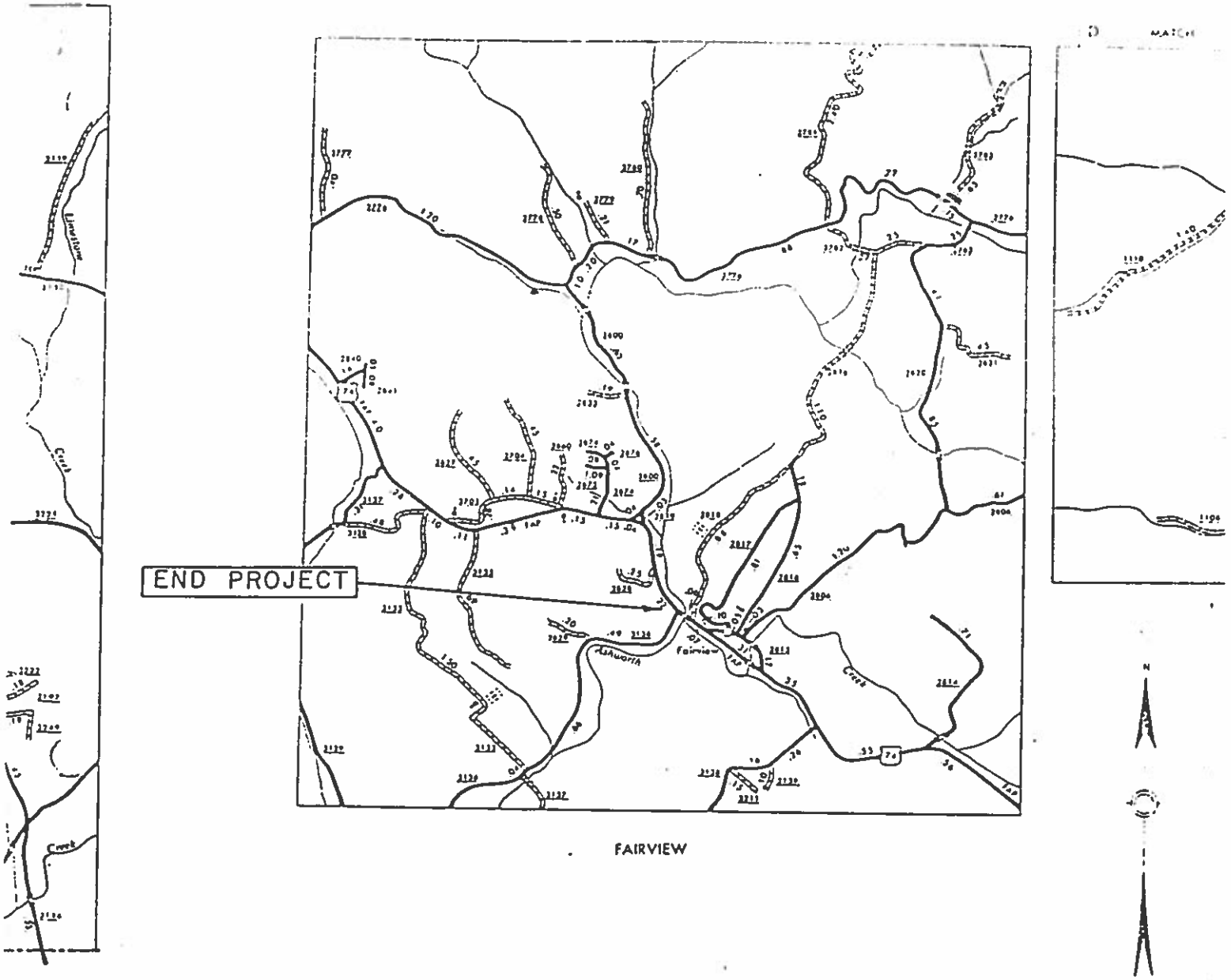


FIGURE 3